HOMING TO BIG SQUAM LAKE BY LARGEMOUTH BASS AND SMALLMOUTH BASS AFTER TOURNAMENT DISPLACEMENT INTO LITTLE SQUAM LAKE (2014-2015)

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JOB 9: Warmwater and Coolwater Fisheries Population Assessments

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INTRODUCTION

The Squam Lakes (Big and Little Squam; 2,930 ha) are a popular destination for tournament and recreational bass anglers with an average of 22 black bass (Smallmouth Bass, *Micropterus dolomieui, and* Largemouth Bass, *M. salmoides*) tournaments held on Big Squam Lake each year (Figure 1). Although Big and Little Squam Lake are connected by a short channel (0.61 km) through which water flows from Big Squam to Little Squam, they are considered to be separate water bodies.

New Hampshire Fish and Game Department rules do not allow tournament anglers to catch bass in one water body and release them into another water body (Fis 503.06 (a) (4): *Culled black bass shall be released immediately into the same body of water from which it was caught, and in a physical state as to reasonably insure its survival*; Fis 503.06 (a) (5): *Black bass entered for the weigh-in at bass tournaments shall be released unharmed into the same water body where caught …..).*

Because there is currently no available weigh-in location on Big Squam Lake for larger tournaments, these tournaments typically rent beach space on Little Squam Lake from the "Boulders Motel" or "Cottage Place." By rule, bass are then required to be taken back to Big Squam Lake for release. During hot weather conditions, bass survival can be compromised after a weigh-in on Little Squam Lake due to the extra time (~ 1 hour) and handling it takes to bring these bass back to Big Squam Lake for release. Additionally, boats must travel through the channel two more times in a given day in order to release fish back to Big Squam Lake, providing the potential for additional social conflicts with other boaters and/or land owners.

Therefore, allowing tournaments fishing on Big Squam Lake and weighing-in on Little Squam Lake to release bass into Little Squam Lake may in some cases increase bass survival and decrease social conflicts. However, the potential exists for negative impacts on bass in Little Squam Lake if bass caught in Big Squam Lake and released into Little Squam Lake do not return to Big Squam Lake on their own accord within a reasonable timeframe (i.e. stockpiling).

For example, stockpiling of bass released into Little Squam Lake may result in higher angler catch and harvest rates in and around the release site than in other areas (Gilliland 1999). Increased bass densities can also increase competition for food and habitat resources as well as enhance opportunities for bacterial diseases (Steeger et al. 1994) and viral transmissions or disease outbreaks, such as Largemouth Bass Virus (Inendino et al. 2005). Spawning success may also be influenced, as male Smallmouth Bass are known to exhibit spawning site fidelity from year to year (Ridgway et al. 1991).

A study was initiated in 2014 with two objectives: 1) Determine the percentage of black bass returning to Big Squam Lake after being caught in Big Squam Lake and released into Little Squam Lake after bass tournament weigh-ins; 2) Determine the time (number of days) it takes black bass to return to Big Squam Lake following tournament weigh-ins and release in Little Squam Lake.

In order to better determine how bass released into Little Squam Lake would behave if an exception to the above rules was made for the Squam Lakes, tournament organizations fishing Big Squam Lake and weighing-in on Little Squam Lake in 2014 and 2015 were provided with a free "Permit to Release Wildlife." As such, 485 Largemouth Bass and 1,507 Smallmouth Bass from Big Squam Lake were released into Little Squam Lake in 2014 and 2015.

METHODS

Bass utilized in this study were caught in Big Squam Lake during a New Hampshire B.A.S.S. Nation tournament on August 10, 2014 and weighed-in on Little Squam Lake. Specific capture locations within Big Squam Lake were unknown. The tournament began at 0700 hours and ended at 1500 hours. Bass were weighed-in by tournament officials and then placed into two insulated covered 790-liter holding tanks until being tagged. Holding tanks were filled with a mixture of fresh lake water (24.5 °C) and cooler water (14.5 °C) brought from off-site to produce a final holding temperature of 21.0 °C. Tanked oxygen was trickled into holding tanks via air stones.

Bass were surgically implanted with radio transmitters in the body cavity (Sigma Eight model TX-PSC-I-450; 12x40mm, 8 g in air; 3-y life expectancy; 6-second random burst rate; 7 frequencies ranging from 149.340 to 149.460 MHz) following methods described by Winter (1996). Incisions were closed with Vicryl sutures. All bass were also externally tagged near the anterior of their dorsal fin with individually numbered Floy tags. Floy tags contained instructions requesting anglers to contact the New Hampshire Fish and Game Department with details of capture and release locations of tagged bass. Press releases, websites, and direct communication with tournament organizers were used to inform anglers of the need to report the catch of tagged fish and to immediately release them.

Only bass were tagged that appeared uninjured, were not exhibiting signs of barotrauma (Schreer et al. 2009), and whose weight was such that a tag constituted less than 2% of its weight (Winter 1996). A third holding tank (see details above) was placed in a boat and tagged bass were held in the tank for at least 2 h prior to being released into the center of Little Squam Lake; 0.5 km from the tagging location and 2.5 km from Big Squam Lake (Figure 1).

A stationary receiver and unidirectional antenna (Orion Broadband Receiver RX-ORI-VHF-E1 and 3-element Yagi antenna) were placed at a boathouse in the Squam Channel (approximately 0.40 km from Little Squam Lake and 0.16 km from Big Squam Lake) to monitor for tagged bass presence (Figure 1). The antenna was oriented so tagged fish in the channel would be detected, but tagged fish in Big and Little Squam Lake would not. Receiver data were downloaded at least once every two weeks and a transmitter with a burst rate of 15 minutes was placed in the boathouse to ensure the receiver was working properly. Receiver data were collected from August 10, 2014 to December 31, 2015.

The total time tagged bass were detected in the Squam Channel by the receiver allowed me to differentiate between fish that were freely swimming and those that were in boat's live well. A temperature logger (Onset Hobo Water Temp Pro V2) was placed in the Squam Channel and recorded water temperature each hour.

Because only one antenna was used in the channel, bass presence could be detected but direction of movement and final lake of "residence" was unknown. Therefore, additional surveys were required to confirm if bass detected in the channel moved to Big Squam Lake or to Little Squam Lake. Accordingly, a portable antenna and receiver (6-element Yagi antenna and a Lotek SRX-400 or SRX-800 receiver) and boat were used to locate tagged bass in Big and Little Squam Lake between August 29, 2014 and August 13, 2015. Eight boat radio telemetry tracking surveys were performed in Big Squam Lake and seven in Little Squam Lake (Table 1). I attempted to survey the entire area of each respective lake during each boat tracking day.

After a tagged bass was confirmed as having moved back to Big Squam Lake by boat tracking, the time (d) for that fish to return to Big Squam Lake after tournament displacement was calculated by subtracting the date bass were tagged from the last date that fish was detected in the Squam Channel. I used Cox-Regression to examine differences in return rates (d) to Big Squam Lake between Smallmouth and Largemouth Bass. Cox-Regression allowed me to control for both bass that were known to be harvested and for bass that had not moved back to Big Squam Lake by the end of the study. A t-test was used to compare TL of bass that returned to Big Squam Lake and those that did not.

RESULTS

Thirty-three bass (10 Largemouth and 23 Smallmouth) were surgically implanted with radio transmitters and monitored from August 10, 2014, to December 31, 2015. Of the 33 bass tagged, only one Smallmouth Bass was never located again after release. It is possible this fish left Little Squam Lake through the Squam River or was harvested by an angler and not reported. Three tagged Smallmouth Bass were caught and harvested by anglers (10, 23, and 327 d after being released, respectively). None of these fish returned to Big Squam Lake prior to being harvested. Harvested bass were not removed from the sample size as survival analysis (Cox-Regression) was used to censor these observations.

The percentage of bass that returned to Big Squam Lake after tournament displacement into Little Squam Lake was similar between species for the study period from August 10, 2014 to December 31, 2015. The percentage of Smallmouth Bass that returned to Big Squam Lake was 61% (14 of 23 fish) and for Largemouth Bass was 60% (6 of 10 fish). For both species combined, the percentage returning to Big Squam Lake was 61% (20 of 33 fish).

The number of days it took bass to return to Big Squam Lake after tournament displacement into Little Squam Lake did not differ significantly between species (P = 0.69; Figure 2). Smallmouth Bass that returned to Big Squam Lake took 8 to 349 d (median = 17 d) and 93% (13 of 14 fish) of returning fish returned within 24 d of tournament displacement. Largemouth Bass that returned to Big Squam Lake took 4 to 47 d (median = 23 d) and 67% (4 of 6 fish) of returning fish returned within 24 d of tournament displacement (Figure 2).

Although the last boat radio telemetry tracking survey was performed on August 13, 2015, the stationary receiver and antenna were operational until December 31, 2015, and no new tagged bass were detected in the Squam Channel after August 13, 2015. No tags were detected in either lake during boat tracking surveys that indicated a tag was shed or that a fish had died (i.e. no multiple relocations in same exact location). Tagged bass were not detected in the Squam Channel when water temperature was < 9.0 °C.

Tagged Smallmouth Bass TL ranged from 389 to 463 mm (mean = 423 mm; SD = 18) and weight ranged from 840 to 1,333 g (mean = 1,051 g; SD = 123). Tagged Largemouth Bass TL ranged from 395 to 508 mm (mean = 457 mm; SD = 41) and weight ranged from 893 to 1,993 g (mean = 1,534 g; SD = 404). The TL of Smallmouth Bass and Largemouth Bass that returned to Big Squam Lake was not significantly different from the TL of bass that did not return to Big Squam Lake (Smallmouth: P = 0.314 and Largemouth: P = 0.322).

DISCUSSION

Results of my study showed the majority of Smallmouth and Largemouth Bass (61% and 60.0%, respectively) returned to their lake of capture after being caught during a tournament in Big Squam Lake on August 10, 2014, and displaced to the interconnected Little Squam Lake. Comparisons of my results to other studies is limited, as to my knowledge, similar research on black bass tournament displacement between interconnected lakes is limited to Pearson (2002), whose sample size was low (n = 2) and restricted to Largemouth Bass. Despite apparent difficulties in comparisons due to sample size, Pearson (2002) did find one of two (50%) Largemouth Bass tagged with radio transmitters moved back to its lake of capture after being displaced between two interconnected Indiana Lakes by tournament anglers.

Studies examining movement of non-tournament displaced black bass between interconnected lakes are also lacking. In the study referenced above, Pearson (2002) found no Largemouth Bass returned to their lake of capture after three bass were collected by electrofishing and displaced into an interconnected lake. Dequine and Hall (1950) tagged 1,616 Largemouth Bass with “Monel-metal strap tags” to examine movement in six interconnected lakes in Florida. Bass were captured by seining and angling, and researchers relied on angler catches for tag returns. Although the majority of bass in their study were released in their lake of capture after tagging, 65 bass were displaced into an adjacent interconnected lake and 17% of these were later caught in their original lake of capture. Movement of non-displaced bass did occur between

interconnected lakes, but no migration pattern was evident. A study in the Adirondack Mountains, New York, documented stocked Largemouth Bass movement between interconnected lakes, but movement rates were not quantified (Daniels et al. 2008).

My results showed that of the bass that moved back to their lake of capture, most did so within a relatively short period of time; 93% (n = 13) of the Smallmouth Bass and 100% (n = 6) of the Largemouth Bass that returned to Big Squam Lake did so within 47 days; the remaining Smallmouth Bass (n = 1) that returned to Big Squam Lake took 349 days to return (Figure 2). In the only comparable study, one Largemouth Bass tagged with radio transmitters moved back to its lake of capture 18 days after being displaced between two interconnected Indiana Lakes by tournament anglers (Pearson 2002).

I found no difference between the percentage of tournament displaced Largemouth and Smallmouth Bass that returned to Big Squam Lake nor between the time it took each species to return to Big Squam Lake. These results were surprising as studies comparing the dispersal of tournament displaced Largemouth and Smallmouth Bass have consistently found Smallmouth Bass move greater distances from release points than Largemouth Bass (Blake 1981; Healey 1990; Klindt and Schiavone 1991; Maynard 2013; Stang et al. 1996). Additionally, Wilde (2003) reviewed 12 scientific studies that examined dispersal of tournament displaced black bass and reported that at the end of studies, a greater percentage of Smallmouth Bass than Largemouth Bass returned to their site of capture (32% vs. 14%, respectively).

The ability of bass to return to an interconnected lake of capture, and the time it takes them to do so, is likely related to distance fish are displaced. For example, the further Largemouth and Smallmouth Bass are displaced, the less likely they are to return to their capture location (Brown et al. 2015; Klindt and Schiavone 1991; Ridgway 2002), or take longer to return to their capture location (Ridgway and Shuter 1996). Similarly, evidence shows bass are unlikely to return long distances (> 8 km) to their capture site (Klindt and Schiavone 1991; Stang et al. 1996; Wilde 2003; Wilde and Paulson 2003), but see Richardson-Heft et al. (2000) and Pflug and Pauley (1983).

Displacement distance of bass in my study was unknown, but was at least 2.5 km (straight line distance from release site in Little Squam Lake to Big Squam Lake). In my study, 57% of tournament displaced Smallmouth Bass and 60% of Largemouth Bass returned to Big Squam Lake within 47 days of being relocated. Other research shows variable results in regards to how long it takes displaced Largemouth and Smallmouth Bass to move similar distances and it is likely my results would have changed if the release location was further away from Big Squam Lake.

For example, Healey (1990) found tournament displaced Smallmouth Bass moved an average of 5.8 km in the first 20 days after relocation, while Largemouth Bass moved an average of 2.0 km in the first 40 days. In a simulated tournament, 72% of displaced Smallmouth Bass were > 5.5 km from the release site after 5 days (Kaintz and Bettoli 2010). In comparison, other studies of displaced bass have shown lesser movement.

Two studies of tournament displaced Largemouth Bass showed 63% of fish moved < 0.5 km after 43 days (Wilde and Paulson 2003) and 57% moved < 2 km after 60 days (Hunter and Maceina 2008). In a study of non-tournament displaced Largemouth Bass, it took fish 14 days to move > 0.4 km from a release site (Ridgway 2002). Bunt et al. (2002) found tournament displaced Smallmouth Bass remained within < 1 km of a release site for an average of 54 days.

I did not document any bass in the Squam Channel when water temps were < 9 °C. This result complements a number of studies documenting decreased movement of Largemouth and Smallmouth Bass at low water temperatures during winter (Colle et al. 1989; Hanson et al. 2007; Hunter and Maceina 2008; Mesing and Wicker 1986; Suski and Ridgway 2009; Todd and Rabeni 1989; Warden and Lorio 1975; Woodward and Noble 1999). Also, Largemouth and Smallmouth Bass have been found to utilize deeper water and/or off-shore habitats at low water temperatures during winter (Barthel et al. 2008; Carlson 1992; Suski and Ridgway 2009; Woodward and Noble 1999), which would likely inhibit their use of the shallow Squam Channel during times of low water temperatures.

Because only one antenna was used in the channel, bass presence could be detected but direction of movement and final lake of "residence" was unknown. Accordingly, boat radio telemetry tracking surveys were used to confirm if bass detected in the Squam Channel moved to Big Squam Lake or to Little Squam Lake. Thus, the number of bass returning to Big Squam Lake could have been underestimated if fish returned to Big Squam Lake and then moved back to Little Squam Lake before a boat radio telemetry tracking survey was performed. Analysis of channel receiver and boat radio telemetry tracking data showed the percentage of displaced Smallmouth Bass returning to Big Squam Lake was not underestimated as all Smallmouth Bass detected in the Squam Channel were later found in Big Squam Lake. However, the percentage of displaced Largemouth Bass returning to Big Squam Lake was likely underestimated as the four Largemouth Bass that were not confirmed to return to Big Squam Lake were all detected in the Squam Channel on multiple days over the course of the study.

RECOMMENDATIONS

Based on the results of this study, I recommend that New Hampshire Fish and Game rules be revised to allow bass tournament anglers fishing Big Squam Lake and weighing-in on Little Squam Lake to release their bass into Little Squam Lake after weigh-in. Additionally, a similar revision should be made for Wentworth and Crescent Lakes (Wolfeboro), which are also connected by a short channel, allowing bass tournament anglers to release bass after weigh-in in either lake.

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LITERATURE CITED

Barthel, B. L., S. J. Cooke, J. H. Svec, C. D. Suski, C. M. Bunt, F. J. S. Phelan, and D. P. Philipp. 2008. Divergent life histories among Smallmouth Bass *Micropterus dolomieui* inhabiting a connected river-lake system. Journal of Fish Biology 73: 829-852.

Blake, L. M. 1981. Movement of tournament-caught and released bass. New York Fish and Game Journal 28: 115-117.

Brown, D. T., J. A. Rice, C. D. Suski, and D. D. Aday. 2015. Dispersal Patterns of Coastal Largemouth Bass in Response to Tournament Displacement. North American Journal of Fisheries Management 35: 431-439.

Bunt, C. M., S. J. Cooke, and D. P. Philipp. 2002. Mobility of riverine Smallmouth Bass related to tournament displacement and seasonal habitat use. American Fisheries Society Symposium 31: 545-552.

Carlson, D. M. 1992. Importance of wintering refugia to the Largemouth Bass fishery in the Hudson River Estuary. Journal of Freshwater Ecology 7: 173-180.

Colle, D. E., R. L. Cailteux, and J. V. Shireman. 1989. Distribution of Florida Largemouth Bass in a lake after elimination of all submersed aquatic vegetation. North American Journal of Fisheries Management 9: 213-218.

Daniels, R. A., R. S. Morse, J. W. Sutherland, R. T. Bombard, and C. W. Boylen. 2008. Fish movement among lakes: are lakes isolated? Northeastern Naturalist 15: 577-588.

Dequine, J. F. and C. E. Hall, Jr. 1950. Results of some tagging studies of the Florida Largemouth Bass *Micropterus salmoides floridanus* (LeSueur). Transactions of the American Fisheries Society 79: 155-166.

Gilliland, E. R. 1999. Dispersal of black bass following tournament release in an Oklahoma reservoir. Proceedings of Annual Conference of Southeastern Association of Fish and Wildlife Agencies (1997) 53: 144-149.

Hanson, K. C., S. J. Cooke, C. D. Suski, G. Niezgoda, F. J. S. Phelan, R. Tinline, and D. P. Philipp. 2007. Assessment of Largemouth Bass (*Micropterus salmoides*) behaviour and activity at multiple spatial and temporal scales utilizing a whole-lake telemetry array. Hydrobiologia 582: 243-256.

Healey, T. P. 1990. Movement and survival of tournament-caught black bass at Shasta Lake. California Fish and Game 76: 36-42.

Hunter, R. W. and M. J. Maceina. 2008. Dispersal of tournament-displaced Largemouth Bass and Spotted Bass in Lake Martin, Alabama. North American Journal of Fisheries Management 28: 678-687.

Inendino, K. R., E. C. Grant, D. P. Philipp, and T. L. Goldberg. 2005. Effects of factors related to water quality and population density on the sensitivity of juvenile largemouth bass to mortality induced by viral infection. Journal of Aquatic Animal Health 17: 304-314.

Kaintz, M. A. and P. W. Bettoli. 2010. Dispersal of Smallmouth Bass from a simulated tournament weigh-in site. North American Journal of Fisheries Management 30: 976-982.

Klindt, R. M and A. Schiavone, Jr. 1991. Post-release mortality and movements of tournament caught Largemouth and Smallmouth Bass in the St. Lawrence River. Bureau of Fisheries, New York State Department of Environmental Conservation. Watertown, NY. 20 pp.

Maynard, G. A. 2013. Lake Champlain Smallmouth (*Micropterus dolomieu*) and Largemouth (*M. salmoides*) Bass stress levels and dispersal following catch and release tournaments in Plattsburgh, NY. State University of New York, Plattsburgh. M.S. Thesis.

Mesing, C. L. and A. M. Wicker. 1986. Home range, spawning migrations, and homing of radio-tagged Florida Largemouth Bass in two central Florida lakes. Transactions of the American Fisheries Society 115: 286-295.

Pearson, J. 2002. Movements of displaced Largemouth Bass in two Indiana natural lakes. Lake and Reservoir Management 18: 257-262.

Responsive Management. 2004. New Hampshire angler survey; resident anglers' participation in and satisfaction with fishing and their opinions on fishing issues. Responsive Management. Harrisonburg, VA.

Ridgway, M. S. 2002. Movements, home range, and survival estimation of Largemouth Bass following displacement. American Fisheries Society Symposium 31: 525-533.

Ridgway, M. S. and B. J. Shuter. 1996. Effects of displacement on the seasonal movements and home range characteristics of Smallmouth Bass in Lake Opeongo. North American Journal of Fisheries Management 16: 371-377.

Ridgway, M.S., J. A. MacLean, and J. C. MacLeod. 1991. Nest-site fidelity in a centrarchid fish, the Smallmouth Bass (*Micropterus dolomieui*). Canadian Journal of Zoology 69: 3103-3105.

Schreer, J. F., J. Gokey, and V. J. DeGhett. 2009. The incidence and consequences of barotrauma in fish in the St. Lawrence River. North American Journal of Fisheries Management 29: 1707-1713.

Stang D. L., D. M. Green, R. M. Klindt, T. L. Chiotti, and W. W. Miller. 1996. Black bass movements after release from fishing tournaments in four New York waters. American Fisheries Society Symposium 16: 163-171.

Steeger, T. M., J. M. Grizzle, K. Weathers, and M. Newman. 1994. Bacterial diseases and mortality of angler-caught Largemouth Bass released after tournaments on Walter F. George Reservoir, Alabama-Georgia. North American Journal of Fisheries Management 14: 435-441.

Suski, C. D. and M. S. Ridgway. 2009. Seasonal pattern of depth selection in Smallmouth Bass. Journal of Zoology 279: 119-128.

Todd, B. L. and C. F. Rabeni. 1989. Movement and habitat use by stream-dwelling Smallmouth Bass. Transactions of the American Fisheries Society 118: 229-242.

U. S. Department of Interior, Fish and Wildlife Service, and U. S. Department of Commerce, U.S. Bureau of the Census. 2013. 2011 National survey of fishing, hunting, and wildlife- associated recreation – New Hampshire.

Warden, R. L, Jr. and W. J. Lorio. 1975. Movements of Largemouth Bass (*Micropterus salmoides*) in impounded waters as determined by underwater telemetry. Transactions of the American Fisheries Society 104: 696-702.

Wilde, G. R. 2003. Dispersal of tournament-caught black bass. Fisheries 28: 10-17.

Wilde, G. R. and L. J. Paulson. 2003. Movement and dispersal of tournament-caught Largemouth Bass in Lake Mead, Arizona-Nevada. Journal of Freshwater Ecology 18: 339-342.

Winter, J. D. 1996. Advances in underwater telemetry. Pages 555-590 *in* B.R. Murphy and D.W. Willis, editors. Fisheries techniques, 2nd edition. American Fisheries Society, Bethesda, Maryland.

Woodward, K. O. and R. L. Noble. 1999. Over-winter movements of adult Largemouth Bass in a North Carolina reservoir. Proceedings of Annual Conference of Southeastern Association of Fish and Wildlife Agencies 51(1997): 113-122.

Table 1. Date of boat radio telemetry tracking surveys on Big and Little Squam Lakes.

Big Squam Lake	Little Squam Lake
August 29, 2014	August 12, 2014
September 10, 2014	August 29, 2014
September 15, 2014	September 15, 2014
September 26, 2014	May 14, 2015
October 13, 2014	June 22, 2015
June 22, 2015	July 9, 2015
July 9, 2015	August 13, 2015
August 13, 2015	

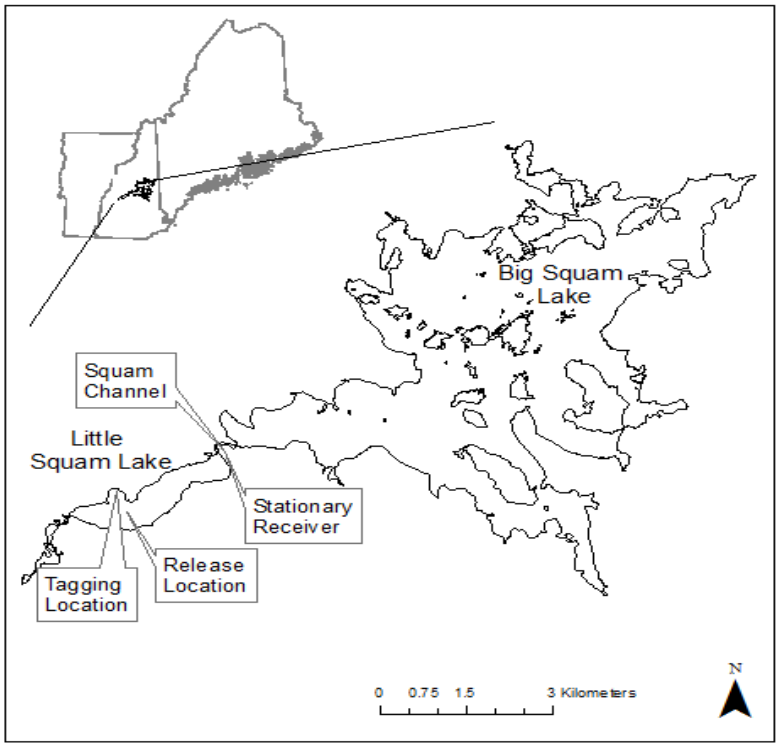

Figure 1. Map of Big Squam Lake and Little Squam Lake, New Hampshire, showing locations of the Squam Channel, stationary receiver and antenna, and Largemouth and Smallmouth Bass tagging and release sites.

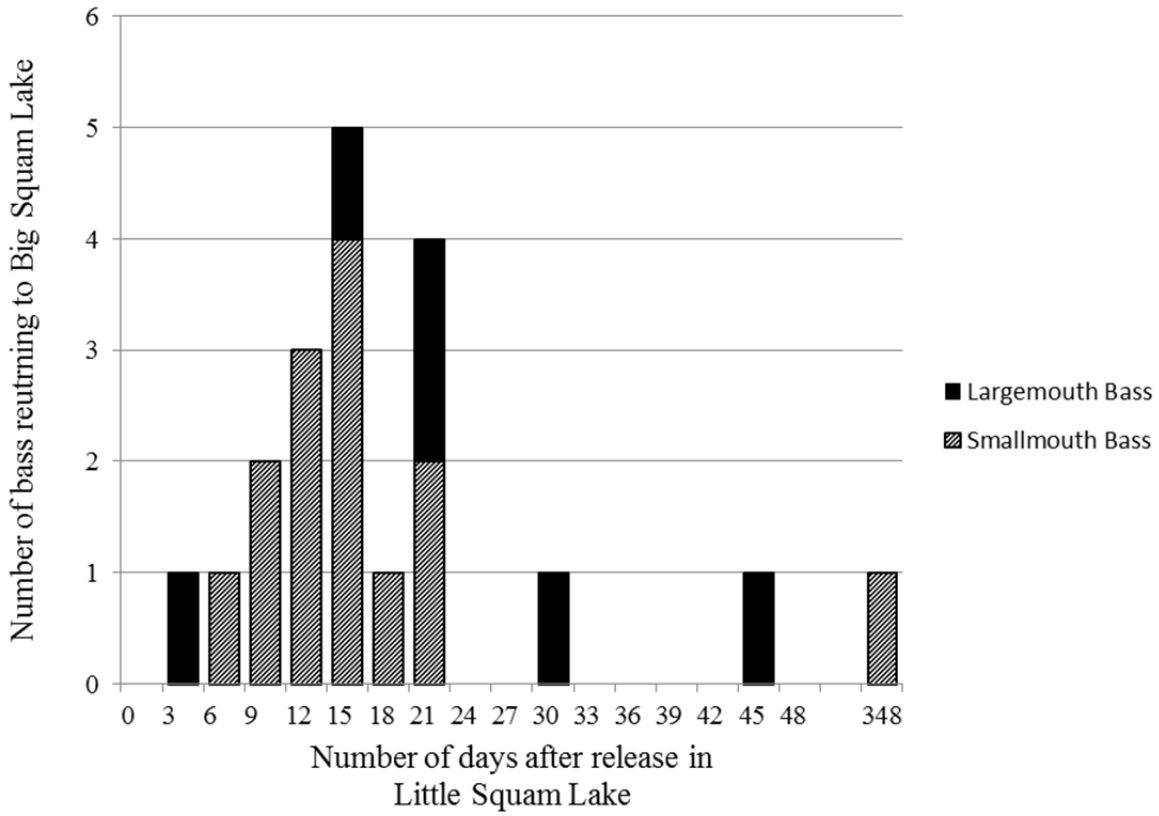

Figure 2. The number of Largemouth and Smallmouth Bass that returned to Big Squam Lake by number of days after release in Little Squam Lake. All bass were caught in Big Squam Lake during a tournament and weighed-in and released in Little Squam Lake on August 10, 2014. Note break on X-axis.